UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF COMMERCIAL FISHERIES

CALIFORNIA FISHERY MARKET NEWS MONTHLY SUMMARY

February 1963

Part II–Fishing Information*

Sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists

CONTENTS

	Page
Ocean Temperatures Unusually Warm in February This Year	1
Sea-surface Temperature Charts, Eastern Pacific Ocean, February 1963	3

Bureau of Commercial Fisheries
Biological Laboratory
P. O. Box 6121, Pt. Loma Station
San Diego 6, California

* Part I - "Fishery Products Production and Market Data" is issued by the Bureau of Commercial Fisheries, Market News Service, Post Office Building, San Pedro, California

OCEAN TEMPERATURES UNUSUALLY WARM IN FEBRUARY THIS YEAR

The winter 1962-1963 will long be remembered by many residents of the mid and eastern United States as one of the cruelest and coldest of the past several decades. Unusual weather, however, was not confined to the eastern half of the nation. As cold wave after cold wave thrust through eastern regions of the continent, coastal sections of the southwest basked in unseasonably warm weather in February following record breaking cold earlier this year. Also many stations in the southwest reported a record breaking dry year.

Scientists of the Extended Forecast Section, U.S. Weather Bureau believe that the abnormal weather over much of the United States, and for that matter, over a great part of the northern hemisphere, may have been caused in part by unusually warm ocean temperatures widespread over the central north Pacific (see previous monthly temperature charts). This and other bits of evidence that have accumulated over the past few years suggest that the energy exchange at the air-sea interface in the North Pacific Ocean may be much more significant than formerly thought in effecting the weather over the continental United States. Precise knowledge, though, as to the nature of the energy exchange processes at the air-sea boundary is not yet known.

Water temperatures at several shore stations on the Pacific coast of the United States jumped record breaking proportions last month, which further substantiates that the winter 1962-1963 has been unusual from the meteorological and oceanographic standpoint. Since July 1962, ocean surface temperatures in coastal water of the temperate eastern Pacific have been trending to a "warmer than normal" regime from one that was generally "cooler than normal." Figure 2 of "Sea Temperature Charts Eastern Pacific Ocean" in this issue (February 1963) shows ocean surface temperatures now are well above average (over 4° F. in some areas) over the entire temperate eastern Pacific. At shore stations, the trend to warming became clearly evident last month. Over the nineteen year period 1945-1963 at Scripps Pier,La Jolla and at Balboa, California, only in February 1958 and 1959 were ocean temperatures warmer than in February this year (Table 1). At Hopkins Marine Station, Pacific Grove, California, only 1958 had warmer February temperatures (Table 1).

Table 1.--Average ocean surface temperatures for February 1945-1963 at selected shore stations.

	Scripps Pier	Balboa	Hopkins Marine Station
	32°52'N.,117°15'W.	33°36'N.,117°54'W.	36°38'N.,121°55'W.
1945	57.2	57.7	54.5
1946	55.0	55.9	52.2
1947	57.0	57.2	53.2
1948	55.6	55.0	52.9
1949	54.9	54.1	51.4
1950	55.4	55.0	52.3
1951	56.3	56.1	52.9
1952	56.5	56.1	54.0
1953	55.8	55.4	51.4
1954	57.7	57.9	54.0
1955	55.4	54.5	52.0
1956	55.2	54.9	51.4
1957	57.7	57.4	53.2
1958	60.8	60.6	57.9
1959	59.4	59.0	55.4
1960	56.3	56.1	54.7
1961	58.1	58.6	55.6
1962	56.5	56.7	53.2
1963	58.6	58.8	56.1
Average	56.8	56.7	53.6

Perhaps more significant is the rate at which temperature changes occurred as compared to rates in other years. On the average (based on the nineteen year period 1945-1963), the ocean cools 0.2° F. from January to February at Scripps Pier and 0.1° F. at Balboa. This year, however, the February average temperature at Scripps Pier was 1.4° F. warmer than the January average and at Balboa, 1.6° F. warmer. The ocean surface at Hopkins Marine Station warms, on the average 0.3°, F. from January to February but this year 3° F. warming took place. At all three stations warming this February was greater than warming for any other February during the years 1945-1963.

Waters off British Columbia, too, showed abnormal heating last month. Sea temperature data at Langara Island, Cape St. James, Kains Island and Amphitrite Point, obtained from the Pacific Oceanographic Group, Nanaimo, B.C., show that normally the ocean cools about 1° F. from January to February. This year temperature data from these stations show that the ocean warmed from January to February.

At present there is no indication of abnormal warming in the eastern tropical Pacific Ocean. Temperatures off Baja California are running near or slightly above normal and those off Central America appear to be near normal.

The pres nt trend to abnormally warm water temperatures in the eastern Pacific may have significant implications to albacore fishermen this year. Historical catch and sea temperature data show that in "warm" years the center of abundance of the albacore population is farther north than in cold years. Fishermen will remember, in the warm years 1958 and 1959, that good albacore fishing was found only to the north of San Juan Seamount and Point Conception. Fishing was excellent in these years off Oregon and Washington. The February warming, too, may have a significant relationship to the timing of the onset of the fishery. Our analysis of historical records suggests, although not conclusively, that the earlier the ocean changes from winter cooling to spring heating in the eastern Pacific, the earlier the fishery commences. Ocean and shore temperatures suggest that we may already be starting our spring heating, about a month earlier than usual, which in turn may indicate an early albacore season. It is well to remember, however, that as the ocean has trended to "warmer than normal" temperatures the last six months it could reverse this trend to "cooler than normal" temperatures between now and the onset of the albacore season. Fishermen are advised to follow ocean temperatures carefully for the following months for indications as to changes in the ocean climate and the possible effect these changes may have on the albacore fishery. The annual prediction made by this laboratory for the albacore fishery will appear early in May.

James H. Johnson
Chief, Tuna Forecasting Program

SEA SURFACE TEMPERATURE CHARTS, EASTERN PACIFIC OCEAN
FEBRUARY 1963

Acknowledgments

The following organizations and stations contributed data for the February 1963 charts:

U.S. Weather Bureau, San Diego, California
U.S. Weather Bureau Ship Visitation Office, Long Beach, California
U.S. Naval Communication Station Balboa, Fort Amador, Canal Zone

U.S. Coast Guard, Port Hueneme Light Station, Port Hueneme, California

U.S. Bureau of Commercial Fisheries, Biological Laboratories, Honolulu, Hawaii; La Jolla, California; Seattle, Washington

U.S. Bureau of Commercial Fisheries, Exploratory Fishing and Gear Research Base, Seattle, Washington

California Department of Fish and Game, M/V Alaska

Guadalupe Island, Coronado Island, Ensenada, Cedros Island and Almejas Bay by Pedro Mercado of the Universidad Autonoma de Baja California, Ensenada, Mexico

Hopkins Marine Station, Pacific Grove, California by J. P. Balesteri

Inter-American Geodetic Survey by Rene Cortes at Salina Cruz, Mexico; David Ortega at Manzanillo, Mexico; Romeo Valencia at Pt. San Jose, Guatemala, D. Reyes at Pt. Armuelles, Panama; V. E. Castillo at Tumaco, Colombia; S. Zambrano at San Cristobal, Galapagos; N. Valenzuela at La Libertad, Ecuador; E. Lopez at Talara, Peru

Inter-American Tropical Tuna Commission, La Jolla and Terminal Island, California

Kelco Company, San Diego, California

Pacific Oceanographic Group, Nanaimo, British Columbia, by H. J. Hollister from observations by R. W. Collins at Quatsino Lightstation; G. J. Skinner at Cape St. James Light; B. Stuart at Amphitrite Point Light; J. M. Hartt at Langara Island Light

Scripps Institution of Oceanography, La Jolla, California by Margaret Robinson and Hans Klein

Charts

Figure 1.--Mean sea surface temperatures (°F) derived from approximately 8000 observations. Squares show temperatures at weather-ship stations. Numerals on shore are temperatures at coastal and light stations.

Figure 2.--Deviation of sea surface temperatures (°F) from long term mean charts of H.O. 225. Hatched areas are colder than mean.

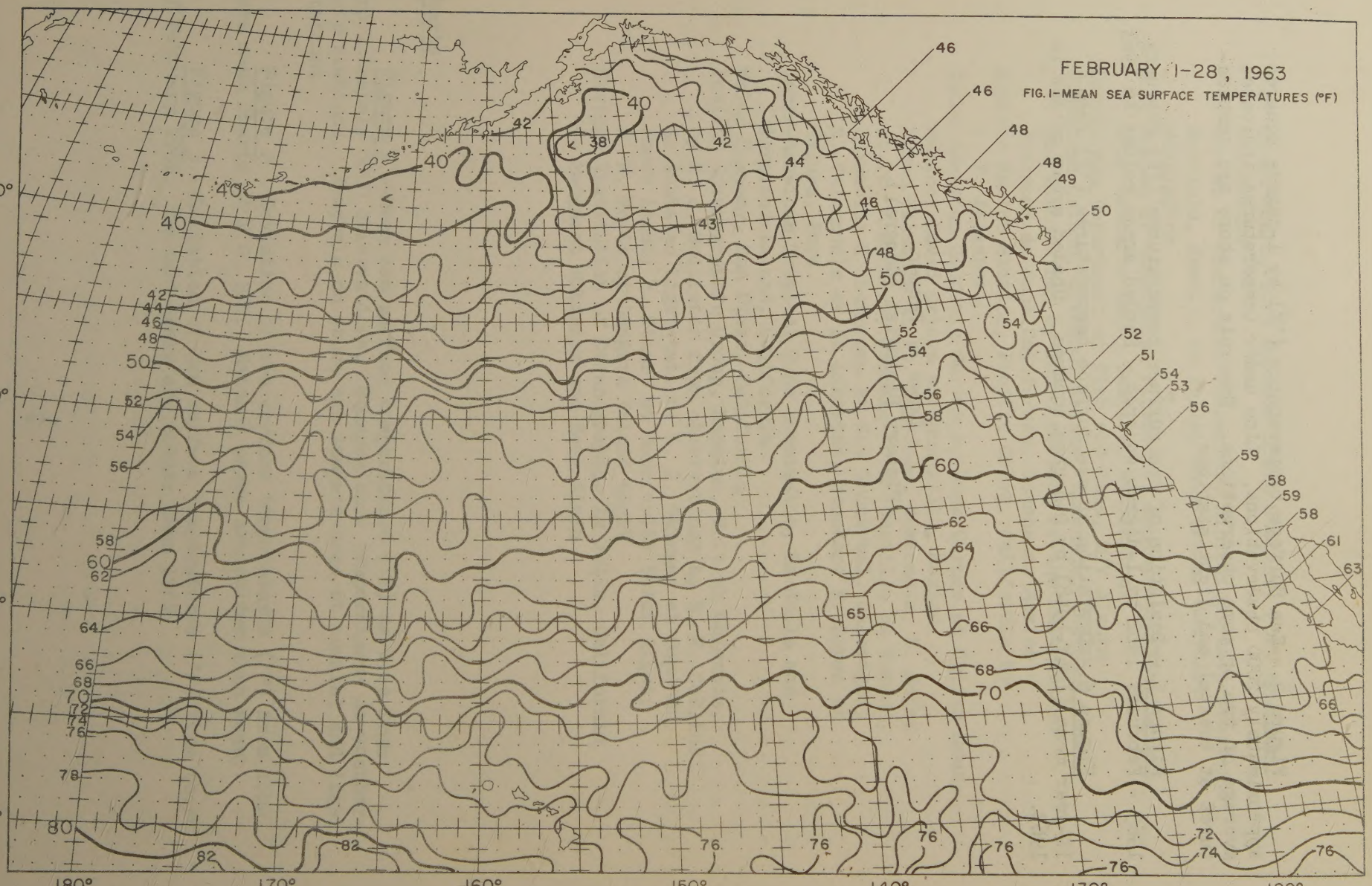
Figure 3.--Deviation of sea surface temperatures (°F) from those of February 1962. Hatched areas are colder than 1962.

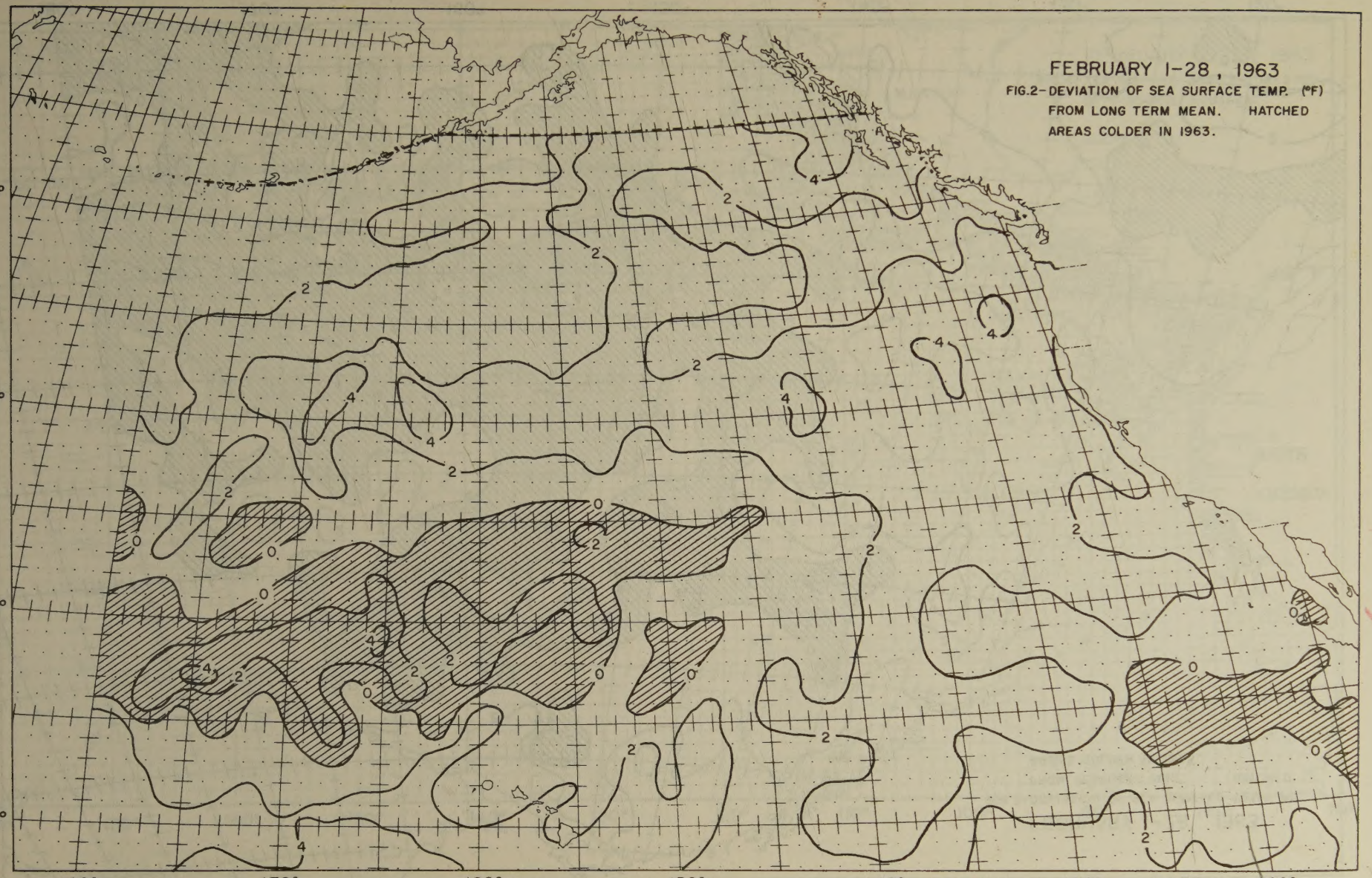
Figure 4.--Sea Surface temperatures (°F) by 1-degree squares, approximately 2000 observations. Line under temperatures indicates average of two or more observations. Numerals on shore are temperatures at coastal and light stations.

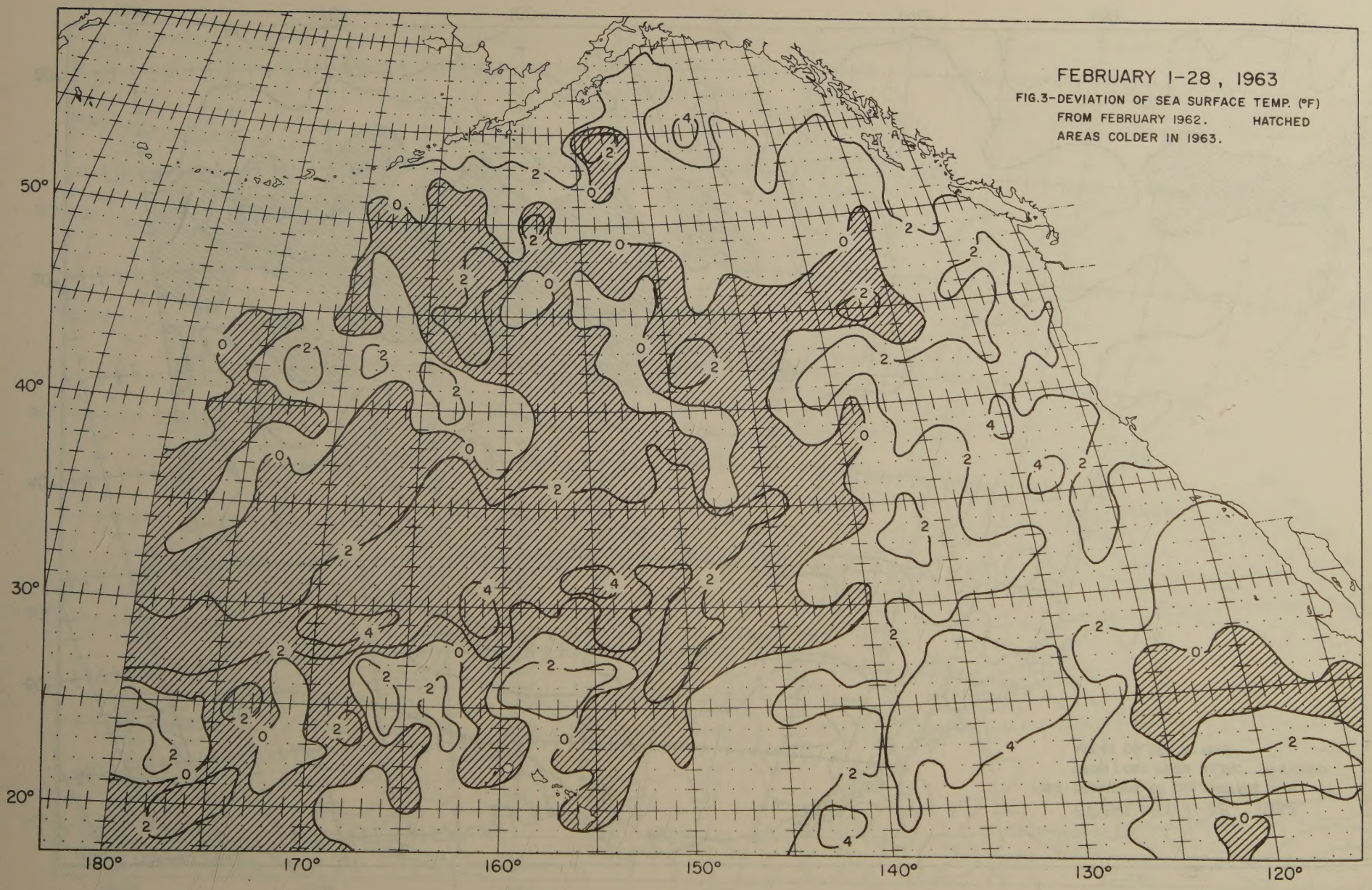
Figure 5.--Deviation of sea surface temperatures (°F) February 1963 - February 1962 by 1-degree squares. Shaded areas colder in 1963.

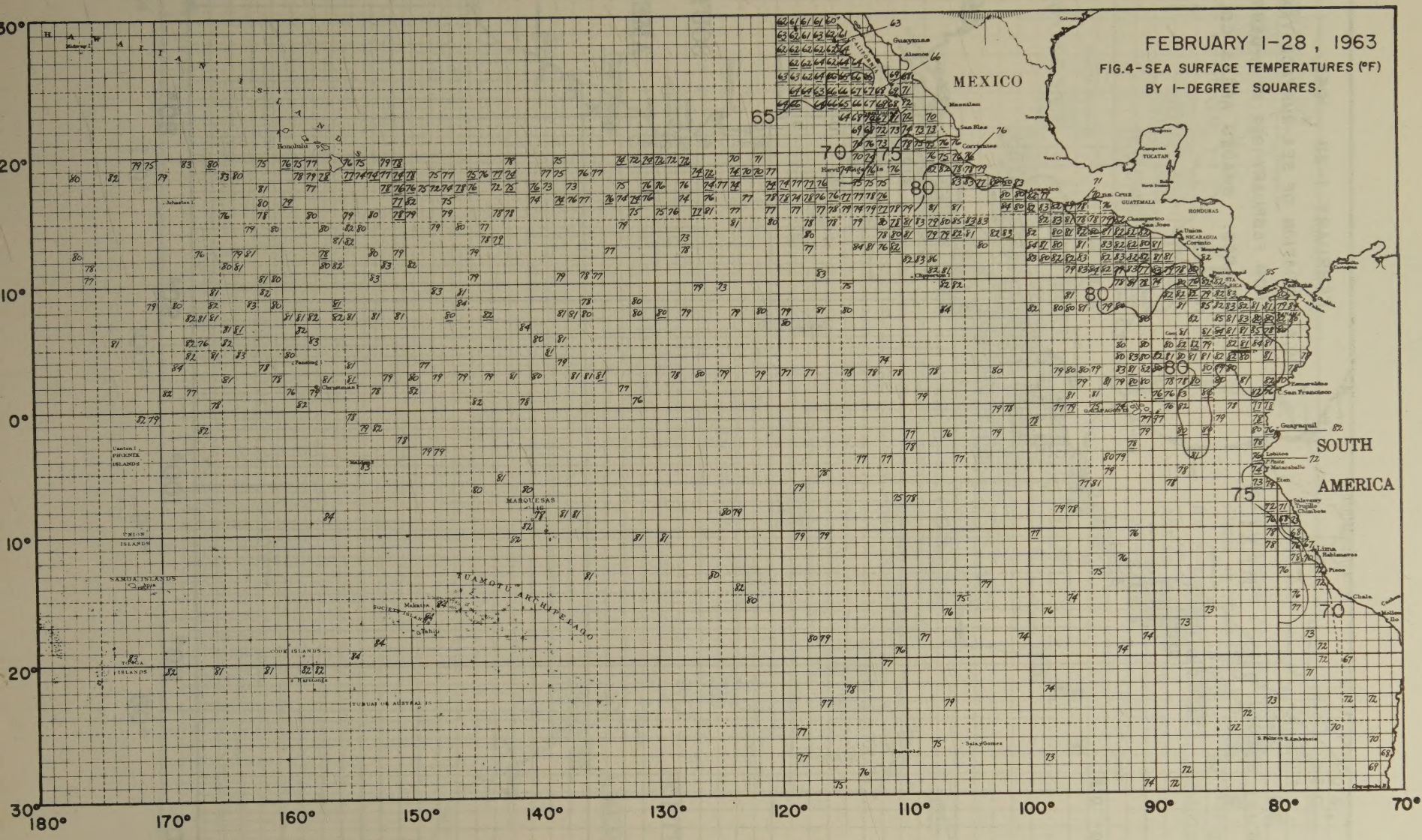
Figure 6.--Deviation of sea surface temperatures (°F) from 12-year mean (1947-1958) by 2-degree squares. Shaded areas colder in 1963.

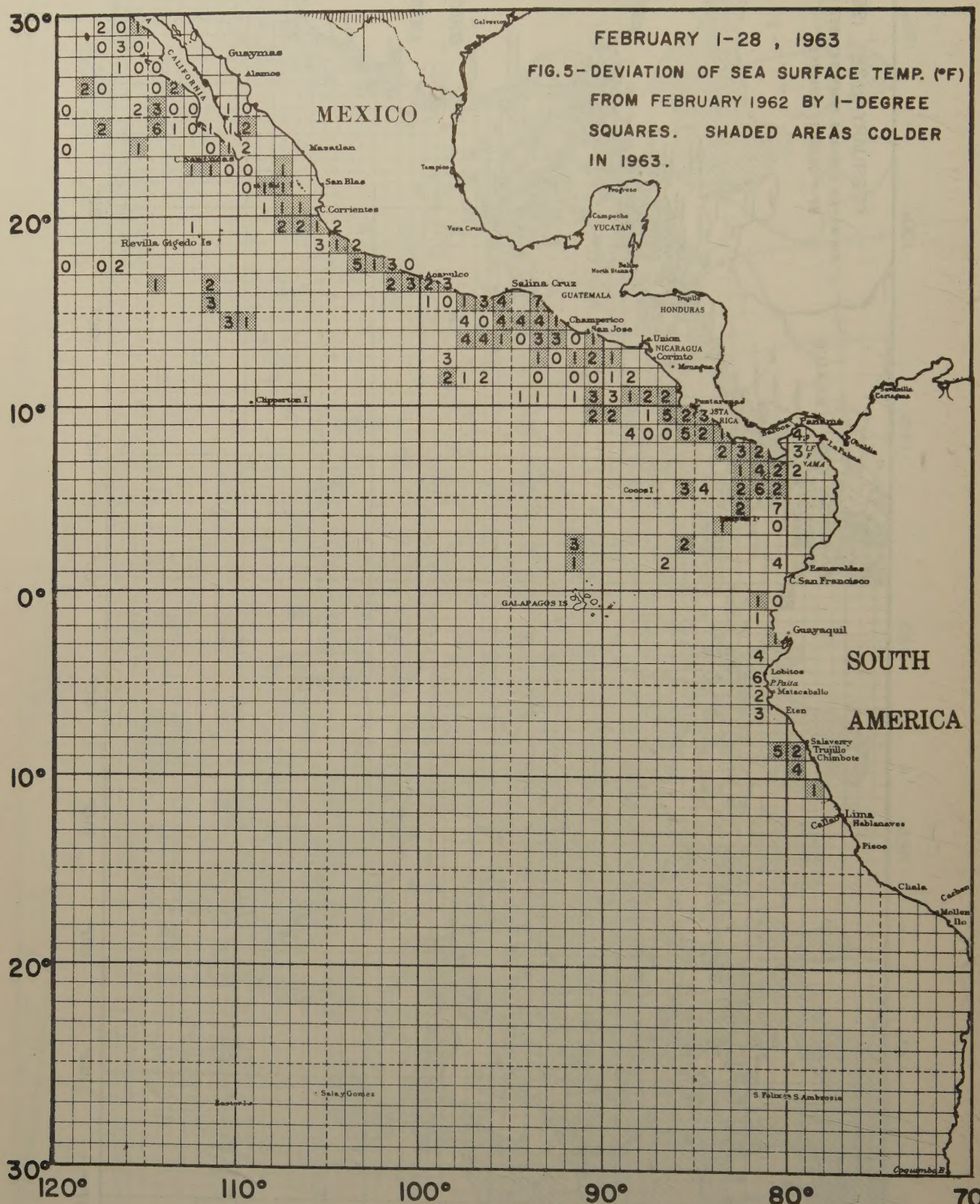
James A. Renner
Fishery Biologist (General)

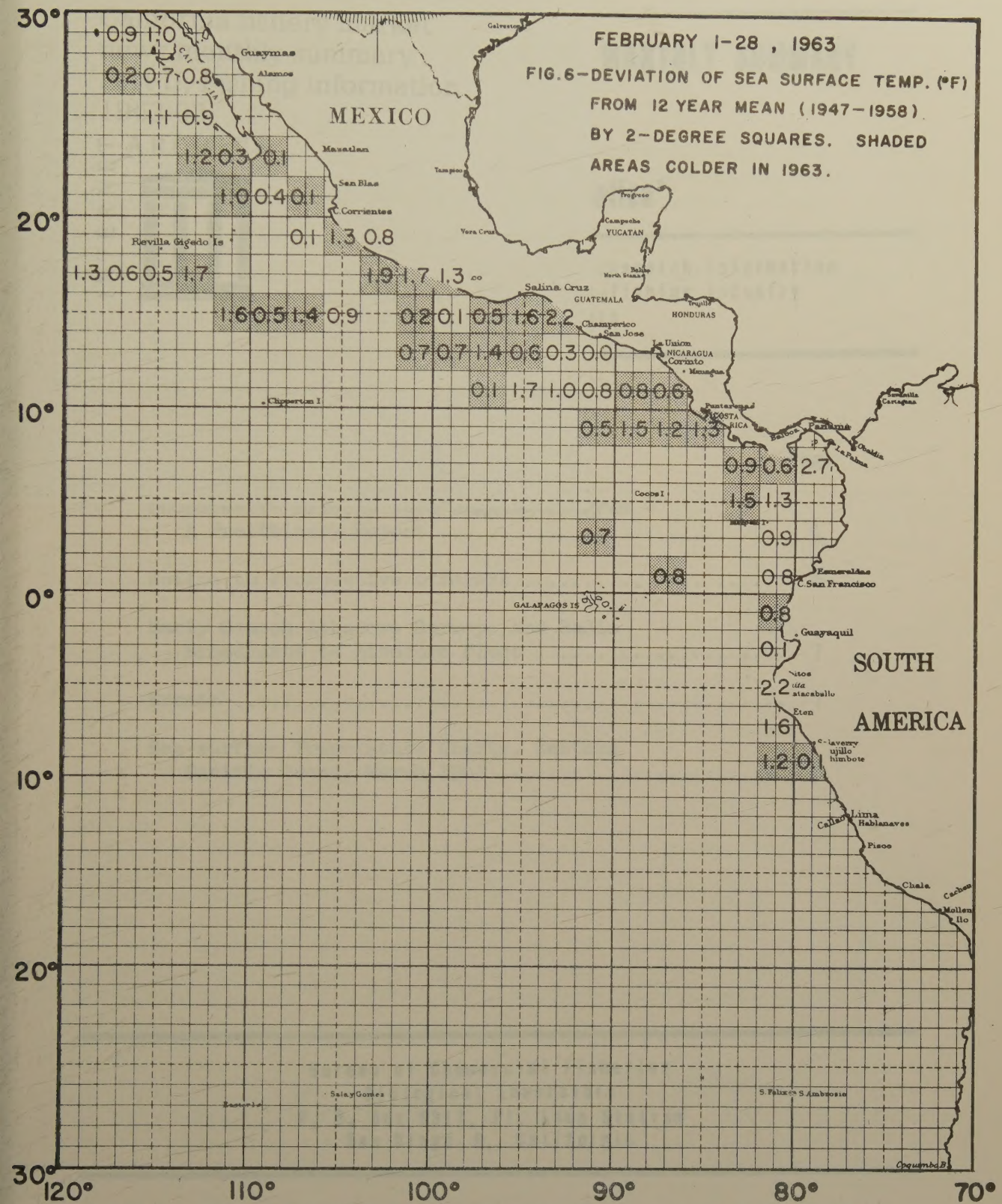

FEBRUARY 1-28, 1963
FIG. 1-MEAN SEA SURFACE TEMPERATURES (°F)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


FEBRUARY 1-28, 1963
FIG.2-DEVIATION OF SEA SURFACE TEMP. (°F) FROM LONG TERM MEAN. HATCHED AREAS COLDER IN 1963.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


FEBRUARY 1-28, 1963
FIG.3-DEVIATION OF SEA SURFACE TEMP. (°F) FROM FEBRUARY 1962. HATCHED AREAS COLDER IN 1963.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


FEBRUARY 1-28, 1963
FIG.4-SEA SURFACE TEMPERATURES (°F)
BY 1-DEGREE SQUARES.
MEXICO
SOUTH
AMERICA
HAWAIIAN ISLANDS
Honolulu
MARQUESAS
TUAMOTU ARCHIPELAGO
Tahiti
Guayaquil
Lima
Callao
Chala
30°
20°
10°
0°
10°
20°
30°
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°


FEBRUARY 1-28 , 1963
FIG. 5 - DEVIATION OF SEA SURFACE TEMP. (°F) FROM FEBRUARY 1962 BY 1-DEGREE SQUARES. SHADED AREAS COLDER IN 1963.
MEXICO
SOUTH AMERICA
GUATEMALA
HONDURAS
NICARAGUA
YUCATAN
GALAPAGOS IS
Guaymas
Alamos
Mazatlan
San Blas
C. Corrientes
Revilla Gigedo Is
Acapulco
Salina Cruz
Champerico
San Jose
La Union
Corinto
Chipperton I
Cocos I
Esmeraldas
C. San Francisco
Guayaquil
Lobitos
P. Pariita
Matacaballo
Eten
Salaverry
Trujillo
Chimbote
Lima
Hablanaves
Pisco
Chala
Mollendo
Sala y Gomez
S. Felix & S. Ambrosio
30°
20°
10°
0°
10°
20°
30°
120°
110°
100°
90°
80°
70°


FEBRUARY 1-28, 1963
FIG. 6-DEVIATION OF SEA SURFACE TEMP. (°F) FROM 12 YEAR MEAN (1947-1958) BY 2-DEGREE SQUARES. SHADED AREAS COLDER IN 1963.
MEXICO
SOUTH AMERICA
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
YUCATAN
Guaymas
Alamos
Mazatlan
San Blas
C. Corrientes
Revilla Gigedo Is
Clipperton I
Salina Cruz
Champerico
San José
La Unión
Corinto
Panama
Balboa
Cocos I
GALAPAGOS IS
Esmeraldas
C. San Francisco
Guayaquil
Eten
Lima
Callao
Hablanaves
Pisco
Chala
Mollendo
Salas y Gomez
S. Felix
S. Ambrosio
30°
20°
10°
0°
10°
20°
30°
120°
110°
100°
90°
80°
70°